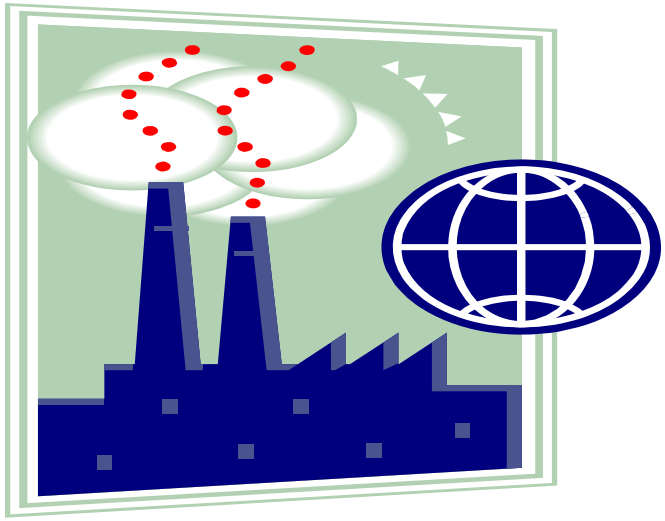
BPIP/PRIME Workgroup



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Ad Hoc BPIP/PRIME Workgroup

- Emerged from 2007 R/S/L Modelers Workshop; BPIP/PRIME issues did not make “Top Three” list; not directly linked with AIWG
- Members include Dennis Becker, MN; John Roth, WI; Jerry Freeman, NC; and Ken Rairigh, WY. Alan Huber has also participated.
- Several potential issues to address, have held a few meetings (conference calls) so far

Potential BPIP/PRIME Issues

- "Split-building" phenomenon - model produces much lower estimates when a building is entered as two adjacent tiers of equal height
- Long narrow buildings - projected length is much longer than actual along-wind fetch over the building length for some wind angles, and the cavity is rotated based on the wind angle and is positioned relative to the projected building rather than the actual building
- Original criterion in BPIP for selecting dominant tier for old downwash algorithms (tier with highest GEP height) may not be applicable in PRIME

Potential BPIP/PRIME Issues (cont.)

- Use of wind tunnel derived "equivalent building dimensions" (EBDs) needs to be reviewed and perhaps standard procedures and/or guidance developed on their use in regulatory modeling – procedures developed for use in previous downwash algorithms may not be appropriate for PRIME downwash due to cavity algorithm and more refined treatment of stack/building geometry
- Capped/horizontal stack procedures for PRIME downwash sources – draft BETA-test options in AERMOD provide a starting point, but some verification and validation is needed

Potential BPIP/PRIME Issues (cont.)

- Discontinuities can occur for stacks that straddle the “EPA formula height” for GEP (Hb + 1.5L); AERMOD model change being considered to remove this discontinuity
- Horizontal meander algorithm currently not incorporated in PRIME component of AERMOD
- AERMOD-PRIME does not account for upwind dispersion for plume released within the cavity due to recirculation
- PRIME includes partial plume entrainment into the cavity, but the wake effects switch is "all-or-nothing" - a formulation change to allow partial entrainment into the wake may reduce some discontinuities in model results, especially for CBL conditions where near field updraft/downdraft influences could be important
- Is there a minimum WS needed to generate a wake?